Simulating Adaptive Multicast Suppression with Unity

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Interest Suppression Basics

The basic idea is to eavesdrop on multicasted interests for some amount of time before forwarding the interest.

Interest suppression only needs to occur at endpoints. NFD's that are only forwarding interests do not change behavior.

Look Behind Case

Look Behind: Place all incoming interests from a multicast face into a queue. When an application wishes to express an interest to a multicast face, check the queue to see if the interest is already in flight.

- If the queued interest gets satisfied, then remove it from the queue. The data most likely will be in the local NFD's content store.

- If the queued interest times out, remove it from the queue.

- If the interest is currently pending, do not forward the application's interest.

Look Ahead Case

Look Ahead: When an application expresses an interest to a multicast face, wait for a random amount of time before forwarding the interest.

- If another interest is overheard on the multicast face, suppress forwarding the application's interest.

- The delay range should be adaptive based on how many duplicate interests are overheard after the application's interest has been forwarded.

This does not include Look Behind case.

Outgoing Interest

Listen for duplicate interests for m_listen

Count the number of total number or interest including this sender's interest.

Modify m_suppress based on count

> 1 → Increase m_suppress if this node sent an interest.

= 0 → Do nothing

= 1 → Was is this sender's interest?

yes → Decrease m_suppress to 0.

no → Do Nothing

Is m_suppress > 0?

yes → Wait for random time up to m_suppress.

no → Express interest

Duplicate interest received?

no → Express interest

yes → Suppress expressing outgoing interest.